Stopping Inappropriate Medicines in the Outpatient Setting

Sai Duraisingham, Barry Jubraj, Shirley Kuo, Vanessa Marvin, Inaki Bovill, Alan Poots

Sai Duraisingham, Formerly Specialist Registrar in Geriatric and General Medicine, Chelsea & Westminster Hospital NHS Foundation Trust, Fulham Road, London

Barry Jubraj, Associate Professor and Rehabilitation Pharmacist, Chelsea & Westminster Hospital NHS Foundation Trust, Fulham Road, London

Vanessa Marvin, Deputy Chief Pharmacist and Associate Professor, Chelsea & Westminster Hospital NHS Foundation Trust, Fulham Road, London

Alan J Poots, Principal Information Analyst, NIHR CLAHRC Northwest London, Chelsea & Westminster Hospital NHS Foundation Trust, Fulham Road, London

Shirley Kuo, Honorary Clinical Lecturer and Research Pharmacist, Chelsea & Westminster Hospital NHS Foundation Trust, Fulham Road, London

Iñaki Bovill, Consultant Physician & Geriatrician, Chelsea & Westminster Hospital NHS Foundation Trust, Fulham Road, London

Email: Correspondence to: Sai Duraisingham at sai.duraisingham@nhs.net

Introduction

Medicines are prescribed for patients, usually appropriately, in response to illness and symptoms. Many are continued for life, especially when prescribed for chronic conditions. With increasing age, some medicines, particularly those requiring adequate organ function for drug clearance, can produce more harm than benefit. Research shows that high risk prescribing increases with the number of medicines, and that patients prescribed five or fewer medicines are less likely to present to hospital with adverse events.[1,2] Polypharmacy can be appropriate with increasing morbidities in older age, but regular review is needed to ensure that each medicine is still appropriate, based on clear outcomes. We have recently described our experience of reviewing, holding and stopping medicines in the rehabilitation setting using the North West London STOPIT tool.[3] Here, we describe our early experience of adapting the Screening Tool for Older People's Inappropriate Treatments (STOPIT), including specific consideration of anticholinergic burden, for use in the outpatient setting. This was a service improvement pilot to explore the practicalities and challenges of deprescribing for elderly outpatients at the Chelsea and Westminster Hospital NHS Foundation Trust (CWFT).

STOPIT in the rehabilitation setting and our plans for outpatients

The STOPIT tool was adapted for use at the CWFT from the Improving Prescribing for the Elderly (ImPE) tool, used at Imperial College Healthcare Trust,[4] a medication review pro forma derived from the validated evidence-based STOPP tool (Screening Tool of Older Persons potentially inappropriate Prescriptions).[2] The primary aim of stopping medicines is prevention of harm in susceptible patients. Both STOPIT and ImPE projects are supported by the National Institute of Health Research Collaboration for Leadership in Applied Health Research and Care Northwest London (NIHR CLAHRC NWL).

As part of our STOPIT initiatives, we found the Medicine for the Elderly rehabilitation unit to be an ideal setting for changing doses or stopping medicines that were considered to be causing harm with little or no benefit.[3] We could monitor the effects of the prescription changes by temporarily halting and then reintroducing at modified doses or stopping permanently. Changes were discussed with patients and relatives as appropriate.

Our subsequent objectives included exploring the use of STOPIT in the outpatient setting, because of the opportunity to 'capture' patients who may not otherwise have presented to their GP or community pharmacy, with the aim of this work to gain early experience of the practicalities and challenges of medication review in outpatients; and to make recommendations for further study on medication review in the outpatient setting. This paper addresses that aim.

Method

A local ethics waiver was obtained for this service evaluation, since this was an extension of previously approved work.

Adaptations to the STOPIT tool:

Two key adaptations were made. Firstly, the STOPIT pro forma for outpatients (Appendix 1) now includes a section about how the medication history could be checked. From our experience, patients sometimes expect that the hospital clinic has a current list of their GP's repeat medicines, which is not the case.

Secondly, we adapted and used work relating to the 'anticholinergic burden' (ACB)[5] that is likely to affect many of our elderly patients. When taken concomitantly, anticholinergic medicines may cause additive adverse effects and present a greater risk. In the outpatient setting, it was hypothesised that an ACB medication list would complement STOPIT in helping the doctor working alone within the time constraints of the current outpatient setting.

Data collection:

A consultant and registrar (IB and SD) in Medicine for the Elderly collected data prospectively and consecutively for patients seen between January and April 2014. This four month period was the available evaluation period for SD to be in clinic. Using STOPIT and the adapted ACB table, data was recorded on a pro forma, including details of each presenting patient's current medication, how the list was confirmed, and what was stopped or altered during the consultation. The post-clinic letter to the GP contained details about any medication changes made. It is important to emphasise that the use of STOPIT criteria is only possible following reliable medicines reconciliation.

Data Analysis:

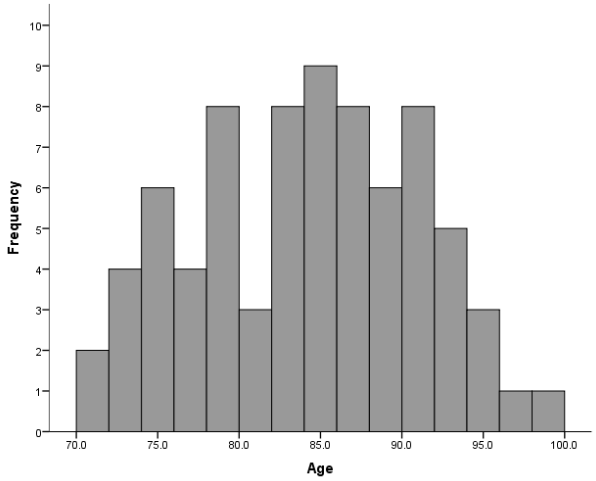
Descriptive statistics were used to define patient demographics, the number of medicines taken and those that were changed. Comparisons were made between groups (genders), using chi-square testing.

Results

Demographic summary:

From 112 outpatient appointments during our study period, 101 patients were recruited, 11 of whom were seen twice. Patients were assessed using the pro forma as part of our service improvement pilot. The majority of patients were accompanied by a family member or friend. The mean age of patients was 84 (range 71 to 99) years (figure 1); with 51 female (66%) and 26 male patients reviewed.

Figure 1: A histogram of ages of patients reviewed - January to April 2014



Establishing the medication history in outpatients:

In 25/112 (22%) appointments, the patient's current list of medicines could not be checked, so a medication review could not be undertaken. Seventy-seven patients had 87 reviews within the 112 appointments.

The source of the medication history taken is categorised as follows: 23 histories were taken from memory (or that of the patient's accompanying carer, family member or friend); 14 patients had their GP prescription repeat slip, 1 had a GP-typed list, 2 had clinic letters, 15 brought their medicines containers with them (11 were multi-compartment compliance aids (MCAs)). A further 14 had their 'own' lists, which were their own self-typed or handwritten lists. Medication Administration Record (MAR) charts from nursing homes were available for 3 patients and 3 had discharge summaries ('DSUM') available on the hospital system that were recent and still valid. Two sources were not recorded. Table 1 includes the source of the medicines history for those patients where medicines were altered following review in clinic, and shows the numbers of medicines being taken by each patient.

Table 1. Source of the Medication History for patients, where medicines were altered.

Patient number	Age	Gender	Source	Number of medicines in the medication history
1	71	F	Not recorded	4
2	83	F	FP10	6
3	90	F	FP10	14
4	87	F	Not recorded	10
5	87	F	Not recorded	12
6	79	M	Not recorded	9
7	80	M	Not recorded	9
8	83	F	Original boxes	4
9	72	F	From memory	4
10	79	F	DSUM	9
11	79	F	From memory	3
12	76	F	FP10	8
13	79	M	Not recorded	15
14	89	F	MCA	9
15	78	F	FP10	13
16	86	F	Own list	9
17	78	F	Not recorded	6
18	74	M	From memory	7
19	90	F	MCA	6
20	86	F	MCA	5
21	91	F	Own list	11
22	97	M	MAR	12
23	75	M	MCA	8
24	90	F	MCA	6

Medication review in elderly outpatients

Eighty-seven full medication reviews with 77 patients were completed during the study period. Our patients had a broad range of co-morbidities. The purpose of the review was a structured, critical examination of current prescription with the patient to optimise the impact of medicines, minimise medication-related problems and reduce waste. Twenty-four patients had changes made to one or more medicines (24/101 reviews, 24%). The remaining patients were reviewed and medication was deemed appropriate with no need to change. There was no difference by gender in the source for the current medication (χ^2_2=2.602, p=0.272), or the likelihood of medicines being changed (χ^2_1=3.557, p=0.059). 3 patients (4% of reviewed) were on no medicines and no changes were made. One patient was taking one medicine that was stopped and so was left taking no medicines. Of the eleven patients who returned to clinic within the study period, two returned on no medicines and remained on zero. In 9 of the 87 reviews, patients (one already on nil medications) attended outpatients specifically for the falls clinic. The dose of the analgesic tramadol was reduced in one patient; and one the antihypertensive dose of bisoprolol was reduced and ramipril added in another.

The total number of medicines known to be taken by the 77 reviewed patients was 538; a mean of 7 per patient, ranging from 0 to 21. 26 of the 538 medicines (4.8%) were eye drops for glaucoma and other chronic eye conditions that the doctor in this clinic would not be expected to review but would need to take into account when considering other systemic medicines. 34 medicines in total (7%) were stopped during the study period. 3 of these medicines in 3 different patients were not permanently stopped but 'held' pending further review in clinic (Adcal, alendronate and allopurinol). A further 10 medicines were altered (rather than stopped) on review in clinic: a lower dose in 6 cases (one medicine in each case); switched to an alternative in 2 cases (omeprazole to ranitidine, aspirin to rivaroxaban); and 2 patients had a medicine started (one restarted on lorazepam). All other medicines were reviewed but not altered. The medicines altered during the review for 24 patients and 43 medicines are presented in Table 2.

Table 2: the medications altered during review in an outpatient setting:

Patient no	**Intervention**	**Medicine**
1	Stop	Indapamide
2	stop	Cetirizine
2	reduce	Simvastatin
3	hold	Alendronate
4	stop	Quinine
5	stop	Amlodipine
5	stop	Rivaroxaban
5	stop	Lactulose
5	stop	Co-codamol (2 ingredients - paracetamol/codeine)
6	stop	Tamsulosin
7	stop	Solifenacin
7	switch	Change omeprazole to ranitidine
8	switch	Change aspirin to rivaroxaban
9	stop	HRT
10	stop	Quinine
11	stop	Arthrotec® (2 ingredients) counted once
12	stop	Iron
12	reduce	Omeprazole
13	stop	Digoxin
13	hold	Allopurinol
14	reduce	Tramadol
15	stop	Solifenacin
15	reduce	Bisoprolol
16	stop	Aspirin
16	stop	Amlodipine
16	stop	Adcal® (2 ingredients) counted once
16	stop	Tolterodine
17	stop	Solifenacin
18	stop	Omeprazole
18	stop	Diclofenac

19	stop	Ranitidine
19	stop	Cetirizine
20	reduce	Mirtazapine
21	increase	Mirtazapine
21	stop	Paracetamol
21	hold	Adcal® (2 ingredients) counted once
22	stop	Codeine
22	restart	Lorazepam
23	reduce	Bisoprolol
23	start	Ramipril
24	stop	Iron
24	stop	Folic acid

Discussion

The results of this service-improvement indicate value in outpatient medication review activity, as does other work around decreasing the medication burden in community-dwelling elderly patients.[6] Our interventions were made by experienced physicians who are confident in undertaking medication reviews. It was only possible to stop medicines in 24 patients (24% of the cohort, or 31% of those reviewed). Nevertheless, for some it was an opportunity to reduce medication burden. For example, one patient who had brought her own medicines with her had 4/9 medicines stopped.

The availability of the adapted STOPIT pro forma and the ACB list[5] were helpful in the outpatient setting for speeding up the review process, with value as a quick reference source. Senior staff are familiar with the content and we postulate that more junior doctors would also find these tools valuable for their early medication reviews, particularly given that physicians may be reluctant to review decisions or discontinue or change drug regimens determined by "experts" or from guidelines for younger populations.[6] Focus groups at CWFT have previously suggested that junior doctors feel uncomfortable stopping medicines that more senior doctors have initiated.[3]

Although outpatient time slots are longer in elderly medicine clinics, the time available for a thorough medication review was a limiting factor including recording the review undertaken in the medical file for a subsequent physician, explaining the reasons for changes to the patient and communicating with GPs via a dictated letter. Duplication of medical records is not an issue unique to CWFT.

Changes to medication made in an outpatient appointment may not always be followed through in the community setting and should be subject to further study. There are known to be multiple reasons for this, including inaccurate information or medication lists being provided in the first instance, the outpatient letter not being received or acted on by the GP for various reasons, or the patient themselves not following recommended changes. Hence, real time communication with GPs would be invaluable.

The CWFT Trust invitation letter for an outpatient appointment specifically requests that patients bring their medication with them, but the letter may be received well in advance of the appointment and in some cases, patients did not receive a letter but only a reminder telephone call the day

before the appointment. In this patient cohort, some forgot to bring an up-to-date list. Outpatient receptionists were instructed to remind patients to bring medications with them at the time of the reminder telephone call, however not all patients could be reached. Further study in the area of communication with patients is needed so that improvements might be made in this part of the review process.

24/101 patients had no medicines with them to use as a check, nothing documented, and were unable to give an account of their medication history Important work is already underway in improving medicines reconciliation for inpatient admissions: for example, an audit undertaken in 45 English hospitals (including CWFT) provides evidence that medicines reconciliation at admission prevents adverse events during an inpatient stay.[7] Therefore, for inpatients it is considered essential to have an accurate, verified record of current medication before prescribing or deprescribing. Part of this process requires fast and accurate links between primary and secondary care records that would improve the possibility for review in outpatient settings as well as in the community.

Other challenges and limitations:

We appreciate the limitations of this pilot and the challenges faced, which include the following:

- The small sample size, short timescale and the lack of randomisation
- The lack of a control makes it impossible to discern whether the changes made to medicines in clinic would have happened anyway without the adapted STOPIT tool and ACB table
- The follow up period was just four months, meaning that some new patients may have medications changed in the future on a follow-up appointment in clinic

Nevertheless, our experience indicates that:

- Our reviews did not additionally burden the day-to-day activity of the clinic doctors
- A medication review tool such as STOPIT can be used in this setting; and the effectiveness was augmented by specific consideration of the anticholinergic burden
- Further study on the use of STOPIT in outpatients is warranted, including the effects on pill-burden, medication costs and whether STOPIT makes it more likely that medicines will be reviewed

Conclusion and recommendation

We believe that medication review in the outpatient setting is worthwhile even if no medicines are stopped or changes made, providing the opportunity for discussion with patients/carers and communication with General Practitioners to promote ongoing review. We hope that others will consider the use of tools as an aid to medication review in the outpatient setting, so that a culture of reviewing medicines or prompting a review in all settings can develop. We recommend that further work including larger studies is undertaken to explore quantitative aspects of medication review in the outpatient setting.

References

1. Guthrie B, McCowan C, Davey P, Simpson CR, Dreischulte T, Barnett K. *High risk prescribing in primary care patients particularly vulnerable to adverse drug events: cross sectional population database analysis in Scottish general practice*. BMJ (Clinical research ed) 2011;342:d3514. doi: 10.1136/bmj.d3514.

2. Gallagher P, O'Mahony D. *STOPP (Screening Tool of Older Persons potentially inappropriate Prescriptions) application to acutely ill elderly patients and comparison with Beers criteria.* Age Ageing (2008); 37: 673-679

3. Saheb MA., Jubraj B., Bovill I., Kuo S., Marvin V. *Intermediate Care.* Geriatric Medicine (2014); 44: 13-17

4. Thakkar K, Jacklin A., Patel N., Jamil S., Bray H. and Dickinson E. (2013) The improving prescribing for the elderly (ImPE) project: Health Foundation White Paper. Available here http://patientsafety.health.org.uk/sites/default/files/resources/the_improving_prescribing_for_the_elderly_project.pdf Accessed on 09-12-2014

5. Chaudhury, N. *Using a "MAP" to steer patients away from medicines-related falls.* Clinical Pharmacist (2013); 5: 119-121

6. Garfinkel D., Mangin D. *Feasibility Study of a Systematic Approach for Discontinuation of Multiple Medications in Older Adults.* Arch Intern Med (2010); 170(18): 1648-1654

7. Dodds LJ. *Pharmacist contributions to ensuring safe and accurate transfer of written medicines-related discharge information: lessons from a collaborative audit and service evaluation involving 45 hospitals in England.* Eur J Hosp Pharm 2014; 21:150-155).

Disclaimer

This article presents independent research commissioned by the National Institute for Health Research (NIHR) under the Collaborations for Leadership in Applied Health Research and Care (CLAHRC) programme for North West London. The views expressed in this publication are those of the author(s) and not necessarily those of the NHS, the NIHR or the Department of Health.

STOPIT:

Screening Tool for Older People's Potentially Inappropriate Treatments

OUTPATIENT TOOL: please complete for all patients aged 70 years and above attending Outpatients

Date of form	**Dr completing form (NAME)**	**Patient sticker/ Hospital Number**	Start this form for all patients aged 70 and over attending this clinic
How many medicines is the patient taking regularly			Include regular/"prn", OTC medicines; short-course steroids/ antibiotics. Exclude nutritional supplements/topicals

MEDICATION FOR REVIEW (as potentially inappropriate) Patient's own drugs *seen? Yes* [ ] *No* [ ]
Medication Passport? [ ] /Other medication list?.....

Is the patient on any of these **medicines** currently? N.B These medicines are more commonly hazardous in the elderly and may contribute to illness. **Please tick all that apply**	○ Diuretics	Can cause falls and metabolic disturbances.
	○ Anti-hypertensives ○ Other cardiac drugs/statins	Can cause falls, metabolic/muscle disturbances and constipation (some)
	○ Benzodiazepines>1month	Can cause falls, confusion and sedation.
	○ Opiate analgesics	Can cause falls, confusion, sedation and constipation.
	○ Oral anticoagulants (e.g.warfarin) ○ NSAIDs (e.g. ibuprofen) ○ Antiplatelets	Increase the risk of bleeding
	○ Antipsychotics	Can cause confusion/ sedation
	○ Proton-pump Inhibitors ○ Antibiotics	Linked with *C diff* and other adverse events especially in elderly. Is the course length appropriate/should be stopped?
	○ Polypharmacy	Tick if the patient is on 6 or more medicines currently

PROBLEMS POTENTIALLY ATTRIBUTABLE TO MEDICATION

N.B. These symptoms/problems have been identified as potentially being medication-related problems. **Please tick all that apply**	○ Falls including postural hypotension, impaired balance, dizziness	Consider all falls-related drugs , and the anticholinergic burden (ACB) of current medicines*
	○ Bleeding	Consider all drugs which increase the risk of bleeding
	○ Confusion/sedation	Consider all psychoactive drugs and the ACB*
	○ Metabolic disturbance such as dehydration, renal impairment, electrolyte disturbance	Consider diuretics, antidepressants, antihypertensives.
	○ Constipation	Consider all opiate-related analgesics. Tick here if patient is already on a laxative ○

* ACB: The anticholinergic burden (calculated from combinations of drugs with muscarinic action or side effects) may contribute to cognitive impairment, falls and fractures.

References cited in: *Using a MAP to steer patients away from medicines-related falls.* Navila Chaudhry. Clinical Pharmacist 2013;5:119-121.

STOPIT Medication Review Drugs that can contribute to medication-related problems in the elderly	
Problem: **Falls** (including postural hypotension, impaired balance, dizziness)	Antihypertensives Diuretics (e.g. amiloride) Bladder antimuscarinic drugs (e.g. oxybutynin) β-blocker eye drops (e.g. timolol) See also under Confusion and Sedation
Problem: **Confusion, Sedation**	<u>SEDATION</u> Benzodiazepines 'Z' drugs (e.g. zopiclone, zopidem) Chlorals and derivatives Opioids and related drugs (e.g. tramadol) Sedating antihistamines Antipsychotics (e.g. haloperidol, olanzapine, quetiapine, risperidone, sulpiride) Centrally acting antihypertensives (.g. clonidine, Methyldopa) <u>CONFUSION</u> Opioids and related drugs (e.g. tramadol) Anticholinergics (e.g. procyclidine) Tricyclic antidepressants
Problem: **Bleeding**	Oral anticoagulant drugs (e.g. warfarin) Non-steroid anti-inflammatory drugs (NSAIDs) Antiplatelets Steroids
Problem: **Metabolic disturbance** (such as dehydration, renal impairment, electrolyte disturbance)	Diuretics (e.g. amiloride) ACE inhibitors ARBs (e.g. candesartan) Nonsteroidal Anti-inflammatory Drugs (NSAIDs) Acetazolamide SSRIs (e.g. citalopram) Other antidepressants (e.g. mirtazapine, venlafaxine) Antiepileptic (e.g. carbamazapine) Donepezil Proton-pump inhibitors (PPIs)
Problem: **Constipation**	Opioids and related drugs (e.g. tramadol) Ferrous sulphate and related compounds Calcium resonium Tricyclic antidepressants Anticholinergics (e.g. procyclidine) Antispasmodics (e.g. hyoscine) Verapamil Bladder antimuscarinic drugs (e.g. oxybutynin) Antipsychotics (e.g. haloperidol, olanzapine, quetiapine, risperidone, sulpiride)

Adapted from the STOPP Criteria : Hamilton H, Gallagher P, Ryan C, Byrne S, O'Mahony D. Arch Intern Med. 2011;171(11):1013-1019